

In the Claims:

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1. (currently amended) A control device with a mobile component mounted on a ball pivot, wherein the mobile component is adapted to be rotated around at least two different axes and the device comprises detection means for optically detecting the position of this component, said detection means being connected to information processing means and comprising at least two arrays of photodetectors for detecting points uniformly distributed over at least one support in the shape of a sphere or a portion of a sphere, the arrays and the said support being positioned around the ball pivot of said component and some being fixed and others mobile and secured to the mobile component, for detecting the position of a mobile component, comprising:

- (a) a mobile component (10);
- (b) ball pivot means (14, 16) connecting said mobile component for rotation around three different axes relative to a fixed component (12);
- (c) detection means for optically detecting the position of said mobile component relative to said fixed component, said detection means being connected with an information processing means (30) and including:
 - (1) a pair of point supports (20) each defined by portions of a sphere that is concentrically arranged about the axis of said ball pivot means, each of said point supports being connected with one of said mobile and fixed components and including a plurality of uniformly spaced optically detectable points (26); and

(2) a pair of arrays of photodetectors (22) connected with the other of said fixed and mobile components opposite and spaced from said point supports, respectively.

2. (original) A device according to claim 1, wherein the arrays of photodetectors are fixed and the said support is borne by the mobile component.

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Claim 3 (cancelled)

4. (original) A device according to claim 1, wherein said photodetector arrays are positioned at 90° from one another around a rotation axis of the mobile component.

5. (original) A device according to claim 4, wherein one of the arrays is angularly offset around said rotation axis, by an angular distance corresponding to half the angular extent of a photodetector.

6. (original). A device according to claim 1, wherein each array comprises at least three rows and three columns of photodetectors.

7. (original) A device according to claim 6, wherein one photodetector of each array of three rows and three columns of photodetectors is suppressed or disconnected.

8. (original) A device according to claim 1, wherein the supports and the arrays of photodetectors are centered on the ball pivot.

9. (original) A device according to claim 1, wherein the points are equidistant and located on apexes of identical and adjacent equilateral triangles.

10. (original) A device according to claim 1, wherein each point has a dimension corresponding to at least that of a photodetector of the said arrays.

11. (original) A device according to claim 1, wherein the points are optically transparent, reflecting, diffusive and/or colored.

12. (original) A device according to claim 1, wherein said support bears at least one reference point for which the optical properties and/or the dimensions are different from those of the others points.

13. (previously amended) A device according to claim 1, wherein the information processing means comprise programmed means for determining the positions of the said points with respect to said photodetector arrays and for tracking the trajectories of said points upon displacements of the mobile component, said programmed means being programmed for first searching in each array for a group of three photodetectors seeing a same point, and then among the remaining photodetectors, for a group of two photodetectors seeing a same point and comprising a central photodetector, and then among the remaining photodetectors, for the groups of two photodetectors of the contour of the array seeing a point, and then among the remaining photodetectors, for photodetectors each seeing one point or a portion of a point overlapping an edge of an array, and then for determining the positions of the centers of the points seen by the photodetectors, and for repeating these determinations with a sufficient frequency so that the displacements of the points between two successive determinations are less than the radius of a point.

14. (original) A device according to claim 1, wherein the mobile component is a lever.

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15. (new) A device according to claim 12, wherein said other points are identical with one another.